



Long-term exposure to close-proximity air pollution and asthma and allergies in urban children

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Abstract:

The aim of this study was to evaluate the impact of urban air pollution, assessed through reliable indicators of exposure, on asthma and allergies in schoolchildren. A validated dispersion model combining data on traffic conditions, topography, meteorology and background pollution was used to relate 3-yr averaged concentrations of major urban pollutants at the sites of schools to skin prick tests, exercise-induced asthma and reported asthma and allergies in 6,683 children (9-11 yrs) attending 108 schools randomly selected in six French communities. For the 4,907 children who had resided at their current address for the past 3 yrs, asthma (exercise induced, past year and lifetime) was significantly positively associated with benzene, SO₂, particles with a 50% cut-off aerodynamic diameter of 10 microm (PM₁₀), nitrogen oxides (NO_x) and CO. In the same children, eczema (lifetime and past year) was significantly positively associated with benzene, PM₁₀, NO₂, NO_x and CO, lifetime allergic rhinitis with PM₁₀ and sensitisation to pollens with benzene and PM₁₀. Among the 2,213 children residing at their current address since birth, the associations persisted for lifetime asthma with benzene (adjusted OR per interquartile range (95% CI) 1.3 (1.0-1.9)) and PM₁₀ (1.4 (1.0-2.0)), and for sensitisation to pollens with volatile organic compounds (1.3 (1.0-1.9)) and PM₁₀ (1.2 (1.0-1.9)). Accurately modelled urban air pollution was associated with some measures of childhood asthma and allergies.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution

Air Pollution: Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): benzene; CO;SO₂;NO₂;NO_x

Geographic Feature:

resource focuses on specific type of geography

Urban

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : France

Health Impact:

specification of health effect or disease related to climate change exposure

Dermatological Effect, Respiratory Effect, Other Health Impact

Respiratory Effect: Asthma, Upper Respiratory Allergy

Other Health Impact: pollen sensitization

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified